

AD-A261 874



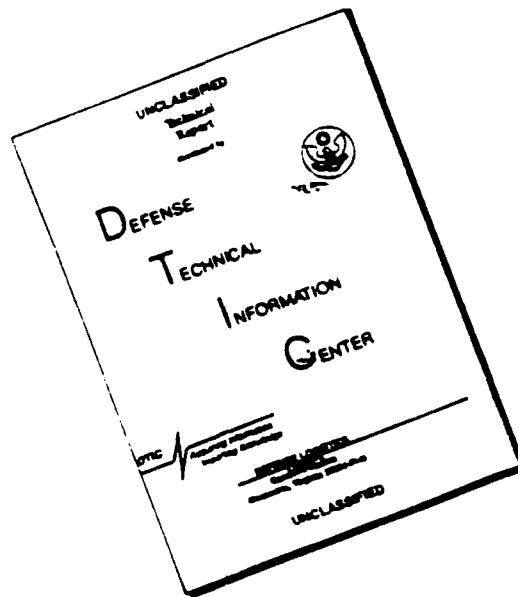
## DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

N/A		1b. RESTRICTIVE MARKINGS N/A	
2a. SECURITY CLASSIFICATION AUTHORITY N/A		3. DISTRIBUTION/AVAILABILITY OF REPORT Unclassified/Unlimited	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE N/A			
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S) U.S. Army-Baylor University Graduate Program in Health Care Administration	
6a. NAME OF PERFORMING ORGANIZATION Fort Belvoir, Virginia		7a. NAME OF MONITORING ORGANIZATION Academy of Health Sciences San Antonio, Texas 78234-6100	
6c. ADDRESS (City, State, and ZIP Code)		7b. ADDRESS (City, State, and ZIP Code)	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8b. OFFICE SYMBOL (if applicable)			
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) Inappropriate Utilization of the Emergency Treatment Room at DeWitt Army Community Hospital Fort Belvoir, Virginia			
12. PERSONAL AUTHOR(S) RICHARDSON, Christine Seitter			
13a. TYPE OF REPORT Final	13b. TIME COVERED FROM 7-89 TO 7-91	14. DATE OF REPORT (Year, Month, Day) 16 Jul 91	15. PAGE COUNT 109
16. SUPPLEMENTARY NOTATION			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) It is a common perception among the hospital staff in most Military Treatment Facilities (MTFs) that the Emergency Treatment Room (ETR) is a misnomer. At DeWitt Army Community Hospital, it is generally accepted by the emergency room staff that the majority of ETR visits could be classified as non-emergent. This situation is compounded by long waiting times for these non-emergent patients, which results in a high degree of patient dissatisfaction. Additionally, there is a high degree of provider dissatisfaction due to the additional duty requirements to staff the ETR. The purpose of this study is to quantify the supposition that there is a high level of inappropriate visits to the ETR and to propose a model for care which will allow patients to be directed to the most appropriate setting for care. The results of this study indicate that an Advice/Triage Telephone Service and an After Hours Clinic in operation with the ETR will help alleviate the problem of inappropriate utilization of the ETR.			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION N/A	
22a. NAME OF RESPONSIBLE INDIVIDUAL Christine S. Richardson, CPT, MS		22b. TELEPHONE (Include Area Code) (703) 664-1868	22c. OFFICE SYMBOL

93 3 8 015

# DISCLAIMER NOTICE



THIS DOCUMENT IS BEST  
QUALITY AVAILABLE. THE COPY  
FURNISHED TO DTIC CONTAINED  
A SIGNIFICANT NUMBER OF  
PAGES WHICH DO NOT  
REPRODUCE LEGIBLY.

Inappropriate ETR visits

1

INAPPROPRIATE UTILIZATION  
OF THE  
EMERGENCY TREATMENT ROOM  
AT  
DEWITT ARMY COMMUNITY HOSPITAL  
FT. BELVOIR, VIRGINIA

Christine S. Richardson, CPT, MS

U.S. ARMY-BAYLOR UNIVERSITY GRADUATE PROGRAM  
IN HEALTH CARE ADMINISTRATION

PRECEPTOR: COL FRANK GILLIAM

16 July 1991

DTIC QUALITY INSPECTED 1

Accession For	
NTIS	CRA&I <input checked="" type="checkbox"/>
DTIC	TAB <input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	23 (m)

Running Head: INAPPROPRIATE UTILIZATION OF THE

93-04866



102pl

TABLE OF CONTENTS

	PAGES
ACKNOWLEDGMENTS.....	3
ABSTRACT.....	4
CHAPTER	
I. INTRODUCTION.....	5
Problem Statement.....	12
Literature Review.....	12
Purpose of the Study.....	28
II. METHODS AND PROCEDURES.....	31
Study Design.....	32
Data Collection.....	34
Statistical Analysis.....	36
III. DISCUSSION.....	43
The Model.....	47
IV. CONCLUSIONS AND RECOMMENDATIONS.....	50
V. REFERENCES.....	51
LIST OF TABLES	
Table 1. Relation of Appropriateness of Emergency Room Visit to Other Study Variables....	58
APPENDIX	
A. American College of Emergency Physicians Definition of a Bona Fide Emergency Room Visit.....	59
B. Standard Form 558.....	75
C. Dependent Variable Frequency Distribution....	77
D. Time Factor Frequency Distributions.....	80
E. Characteristics of the Sample Population Frequency Distributions.....	83
F. Day and Time of Presentation to the ETR Frequency Distributions.....	96
G. Triage Category Frequency Distributions....	101
H. Control Variables Frequency Distributions...	105
I. Correlation Matrix.....	108

Acknowledgments

I wish to thank the staff of the Emergency Treatment Room at DeWitt Army Community Hospital for their cooperation and assistance with this project.

To my husband, all my love. Thank you for letting me go first.

Abstract

It is a common perception among the hospital staff in most Military Treatment Facilities (MTFs) that the Emergency Treatment Room (ETR) is a misnomer. At DeWitt Army Community Hospital, it is generally accepted by the emergency room staff that the majority of ETR visits could be classified as non-emergent. This situation is compounded by long waiting times for these non-emergent patients, which results in a high degree of patient dissatisfaction. Additionally, there is a high degree of provider dissatisfaction due to the additional duty requirements to staff the ETR. The purpose of this study is to quantify the supposition that there is a high level of inappropriate visits to the ETR and to propose a model for care which will allow patients to be directed to the most appropriate setting for care. The results of this study indicate that an Advice/Triage Telephone Service and an After Hours Clinic in operation with the ETR will help alleviate the problem of inappropriate utilization of the ETR.

## Inappropriate ETR visits

5

It is a common perception among the hospital staff in most Military Treatment Facilities (MTFs) that the Emergency Treatment Room (ETR) is a misnomer. At DeWitt Army Community Hospital (DACH), it is generally accepted by the emergency room staff that the vast majority of ETR visits could be classified as non-emergent. This situation is compounded by long waiting times for these non-emergent patients which results in a high degree of patient dissatisfaction. In order to support the large volume of patients presenting to DACH's ETR, the hospital has been forced to expend additional manpower resources in this area. As a result, there is a high degree of provider dissatisfaction due to the additional duty requirements to staff the ETR.

Patients do not intentionally use the emergency room inappropriately, rather they are forced into the ETR because of their inability to access alternative sources of care. At DACH there are limited options available to the patient for treatment of emergent and non-emergent medical problems which manifest themselves after duty hours. In the current system the alternatives are to seek a next-day appointment in the

THIS  
PAGE  
IS  
MISSING  
IN  
ORIGINAL  
DOCUMENT

*10, 7, 8, 9*



to life and limb" criteria (Buesching, 1985). Gifford, Franaszek & Gibson (1989) reported the results of a prospective study of patient and physician interpretation of urgency among those patients presenting to an emergency department. This investigation was an attempt to define in a prospective manner the emergency nature or appropriateness of patient visits to emergency departments.

Foroughi & Chadwick (1989) defined "abusers" of emergency treatment rooms as those patients who presented to an Accident & Emergency Room whose complaint did not require urgent treatment if any, and therefore could have been dealt with by a general practitioner. A comprehensive review of the literature was unable to reveal any studies based on the patient's perception of urgency to determine the percentage of inappropriate visits to the Emergency Room.

Of those authors who have investigated the issue of emergency room utilization, many have concluded that if patients had a mechanism to make the distinction between convenience and emergency they would more appropriately utilize health care services (Beushing, 1985; Hurley, Freud, & Taylor, 1989; Stratman &

Ullman, 1975; and Vayda, Gent, & Hendersot, 1975)). At DeWitt Army Community Hospital patients have no alternative to medical care after duty hours. Additionally, there are no mechanisms currently in place to direct these patients to an appropriate setting for care. I believe that the inability of DeWitt Army Community Hospital to provide these services has contributed to the perceived problem of malutilization of the Emergency Treatment Room.

I propose a new model for the delivery of health care after duty hours be adopted at DeWitt Army Community Hospital to reduce the number of inappropriate visits to the Emergency Treatment Room. The foundation of this model will be the determination of where assets and resources need to be directed in order to satisfy the patient population as well as the internal personnel resources of DACH. The integral components of this model will be the establishment of an Advice/Triage Telephone Service and an After Hours Clinic at DeWitt Army Community Hospital.

### Problem Statement

There is a perception among the medical staff and administration of DeWitt Army Community Hospital that the Emergency Treatment Room is being malutilized. However, the ETR is generally perceived by the beneficiary population to be an extension of the General Outpatient Clinic, Family Practice Clinic, and Pediatric Clinic rather than a true emergency room.

### LITERATURE REVIEW

#### Alternative Sources of Care

The issue of appropriate versus inappropriate utilization of the emergency room has been documented in the literature for the past four decades ( Jacobs, Gavett, & Wersinger, 1971; Shortliffe, Hamilton, & Noroian, 1958; Solon & Rigg, 1972; Vaughan & Gamester, 1966; Welnermann, Ratner, & Robbins, 1966). In 1975, Stratmann & Ullman reported that a substantial number of people were using emergency rooms for the treatment of routine nonurgent problems. They concluded that people use the emergency room as a matter of convenience and because they lack access to alternative

THIS  
PAGE  
IS  
MISSING  
IN  
ORIGINAL  
DOCUMENT

134-14

The national health insurance covers all costs except a standard fee.

Hansagi, Carlsson, Olsson & Edhag (1987) report that a considerable part of the excessive demand on hospital emergency departments in Sweden is for non-urgent health problems. They report that as many as one-third of all emergency department visits could be categorized as non-urgent. They suggest that these visits could more appropriately be handled in another setting, such as a primary health clinic. They also designed a model to divert patients with non-urgent complaints to more appropriate alternative settings for care.

Stewart, Savage, Scott, & McClure (1987) report the same tendencies in United Kingdom emergency departments. In their study of 853 children who presented at an accident and emergency room, over thirty-three percent of the visits were deemed to be inappropriate. It seems that long queues to gain access to emergency room care do not deter the volume of inappropriate visits to emergency departments. Health care economists in Britain have found that long waiting times do not serve a rationing function because

THIS  
PAGE  
IS  
MISSING  
IN  
ORIGINAL  
DOCUMENT

14

A glaring difference between the two models of health care delivery is that HMOs usually require some kind of preauthorization before enrollees can use emergency room services. In their study of HMOs in the greater Chicago area, Hossfeld & Ryan (1989) found that fifteen HMOs responsible for ninety-nine per cent of the responding enrollees advised their subscribers to contact the HMO office, primary physician, or a toll-free number in case of an emergency. The one HMO responsible for the remaining one per cent of the enrollees instructed the subscriber to go to the nearest hospital as a first step in the event of an emergency. In literature to their enrollees, several of the HMOs offered definitions of an "emergency" and attempted to educate their enrollees on what can be considered an emergency or "life threat".

Other HMOs have used different strategies to control the use of emergency services such as contracting with urgent care centers to and imposing financial penalties for the inappropriate utilization of hospital emergency services. Daley, Leaning, & Braen (1987) reported on another HMO initiative to integrate the HMO delivery of care with that of local

emergency medical services. Harvard Community Health Plan joined with Brigham and Women's Hospital, a major Harvard teaching hospital, to provide for hospitalization of the HMO members at that institution. The agreement provided for the establishment of a separate emergency service for HMO members located at the Brigham and Women's Hospital. The service is staffed by HMO physicians who oversee the coordination of emergency care for HMO members.

A significant amount of historical information has been gathered which clearly shows that an overwhelming proportion of emergency room visits during non-duty hours has been for non-urgent care (Hurley, Freud, & Taylor, 1988). Davidson (1978) found that a disproportionate percentage of consumers of primary care in the emergency room are lower income persons. He attributes this pattern to the accessibility of the emergency room during non-traditional hours of operation, its relative proximity to care-seekers brought on by the maldistribution of primary care providers, and the absence of alternate sources of care due to the patient's inability to pay.



#### Advice/Triage Telephone Services

Verdile, Paris, Stewart, & Verdile (1989) report that emergency department personnel are frequently asked to give advice to members of the community who telephone for advice and information about a wide variety of medical problems. They designed a study to determine the consistency and accuracy of directions given to adults who call seeking advice about a problem. They found that telephone advice given by some emergency departments is nonstandardized and may be inadequate to the point of jeopardizing the welfare of a caller. This supports Wolcott's contention that the prohibition against giving medical advice over the phone does not decrease the amount of advice given but does cause the medical advice given to be less valid (Wolcott, 1989).

There are several advantages to a telephonic advice/triage service. First, patients are able to obtain simple medical advice without making an appointment or waiting in a walk-in clinic. Second, ill patients can be seen more quickly, thereby reducing

patient waiting time. Finally, patient waiting areas will be less crowded, thereby reducing the exposure to disease (Yeatman, 1981).

In response to the inconsistency of response within emergency departments, several emergency departments as well as clinics have adopted telephone triage systems with established protocols. Telephone triage and advice have long been an accepted practice among Emergency Medical Services (Fox, Rodriguez, & McSwain, 1981), pediatric settings (Broome, 1986), and poison control centers (Geller, Fisher, Leeper, & Ranganathan, 1988). Poison control centers have been in existence longer, and should be looked at to provide a model for designing telephone triage systems for emergency departments.

According to the American Association of Poison Control Centers (AAPCC), standardized protocols must be developed to manage telephone calls for advice. In addition to protocols, designated personnel should be assigned the responsibility to answer telephone calls for advice. These individuals should receive extensive training in the telephone triage, management and disposition of patients. Finally, the AAPCC recommend

that specific protocols for follow-up of patients be designed as part of the program. (Verdile, Paris, Stewart, & Verdile, 1989)

The documentation of telephone triage is an extremely important element that must not be overlooked. Protocols by their design, facilitate documentation because they are essentially a checklist. Such documentation could be in the form of a log which would contain pertinent information about the call and the type of advice given. (Verdile, Paris, Stewart, & Verdile, 1989)

The use of protocols has been an established practice in the management of common problems in ambulatory patients. Based on a defined medical problem, a protocol specifies those elements of the patient's history, physical examination, and laboratory investigation which must be collected in order to manage the problem. The general format of protocols include branching logic, which allows for individualization of data collected according to a patient's specific characteristics.

Protocols designed for use by practitioners specify rules for referral to, or consultation with, a

physician. However, there are several problems associated with adapting this format to the management of telephonic requests for information: 1) the patient often has a relatively poorly defined medical problem; 2) data collection is limited to questioning the individual or parent; and 3) the range of provider response is limited. These features must be taken into account when developing any protocols to be used in telephone management. (Levy, Rosekrans, Lamb, Friedman, Kaplan, & Strasser, 1979)

According to Levy, Rosekrans, Lamb, Friedman, Kaplan, & Strasser (1979) telephone contacts for initial triage, consultation and advice for management of medical problems constitute as much as one fourth of all pediatric encounters. However, they also report that there is a general lack of consistency of information given over the telephone which leads to frustration among both parents and medical staff. They developed a collection of twenty-eight protocols for twenty-five "chief complaints" in order to meet the need for more efficient processing of telephone calls,

for improved content of telephone care, and for standardization of advice given in their hospital emergency room.

Protocols are also used throughout the military health care system. Vaughn, Wolcott, & Dupont (1980) demonstrated that personnel receiving basic medical training and orientation to an algorithm-directed triage system can direct military patients to appropriate levels of health care. They suggested that such a system could be adapted for telephone screening.

Early studies of emergency department telephone triage in 1980 and 1984 (Shah, Egan, & Bain, 1980; Levy, et al, 1980; Knowles & Cummins, 1984) called for protocol development as well as training and improved staffing. Vaughn, Wolcott, & Dupont (1980) suggested that a centralized system be developed which could respond to telephonic requests for information and advice. The telephone screener could conduct an interview using the triage manual (with protocols) as a guide. Patients could either be directed immediately to a specific health care provider, given an appointment for a later time period, or directed to follow simple self-care recommendations.

In 1979, Strasser, Levy, Lamb, & Rosekrans (1979) suggested that protocols could be used for training health professionals to use the telephone more effectively in pediatric care. They suggested that a set of protocols and the advice could be kept near the telephone for physicians and nurses to use in emergency rooms as well as clinics, group and private practices.

The use of telephone triage protocols could allow for the expanded role of many physician extenders, such as nurses, nurse practitioners, and physician assistants, in all types of health care settings. In 1975, Roglieri recognized the problem of over utilization of the emergency room and documented the use of nurse practitioners to triage and treat the large number of non-seriously ill patients using emergency services in an urban area. In 1979, Perrin & Goodman reported a study which clearly demonstrated that nurse practitioners performed as well as, or better than, pediatricians in all measured aspects of telephone care. Since that time, nurses have been used in emergency rooms to conduct triage and refer patients for care (Abramowitz, Joy & Yurt, 1989; Turner, 1991).

In 1977, the Hospital for Sick Children, Toronto, established a Medical Information Center (MIC) to improve triage, provide a poison information center, improve response to telephone callers seeking advice and establish a telephone consultation service for physicians. The MIC employs specially trained nursing staff. A study of the MIC was conducted two years after it opened and the results confirmed that nurses could effectively relieve congestion, reduce the waiting period for emergency and non-emergency cases, and reduce the need for additional examination rooms. (Shah, Egan, & Bain, 1980)

The effective use of protocols in telephone triage offers many advantages. They provide a check-list, so the user will not omit key information. They make explicit guidelines for decisions regarding the management of a telephone problem. Finally, they provide a record of the telephone call information that could be included in the patients medical record and used for follow-up. (Strasser, Levy, Lamb, & Rosekrans, 1979).

Wolcott (1989) states that medicine must provide a better pre-hospital advice/triage service than we do

now. He contends that there is a demand for this type of service and that patients want it available 24 hours a day. He suggests that a tightly structured telephone advice/triage service would identify those patients at high risk with acceptable sensitivity and specificity. The issue would then become one of how to best provide the service to the patient.

An Advice/Triage Telephone Service at DeWitt Army Community Hospital could be developed in a similar manner to those already in operation at other facilities, both civilian and military. Yeatman (1981) proposed the implementation of a twenty-four hour telephone triage service for ambulatory child care. He stated that a significant percentage of pediatric care could be handled telephonically, thereby promoting home management of minor illnesses, allowing priority of care, economizing physician time, and decrease disease exposure. Kaiser Permanente has implemented a similar program. Enrollees must contact the telephone triage nurse prior to visiting an emergency room to determine the appropriateness of utilization. Patients who go to an emergency room without contacting the triage nurse are charged a co-payment fee that is five times that



of a normal primary care visit if their visit is determined to be inappropriate. Patients whose visit is determined to be appropriate are charged the normal fee for a primary care visit.

Dunn (1985) suggests that although questioning a caller about a problem is acceptable, once any advice is offered over the telephone the emergency department staff member has assumed a duty and then has a legal obligation to the caller and is responsible for any advice given. Dunn warns that it could be considered abandonment if the staff member stops giving appropriate advice and terminates the call. Instead of discouraging the use of telephone advice services, this obligation to the patient should stimulate the use of accepted protocols when conducting triage over the telephone or giving advice. Trautlein, Lambert, and Miller's (1984) review of 200 cases of malpractice directed at emergency departments revealed that none were attributed to advice given to patients over the telephone.

Any model of health care delivery must include patient education as an integral component. Benz and Shank (1982) demonstrated that patient education can

play a significant role in reducing the percentage of inappropriate visits to the emergency room. Their study concluded that a patient education program was successful in both increasing the number of telephone calls prior to an emergency room visit and in reducing the percentage of inappropriate emergency room visits.

#### Purpose Statement

The purpose of this project is to quantify the supposition that there is a high level of inappropriate visits to the DeWitt Army Community Hospital Emergency Treatment Room and to develop a system that will direct patients to appropriate settings for care.

#### Hypotheses

1. The preponderance of visits to the DeWitt Army Community Hospital emergency treatment room can be classified as inappropriate.
2. Inappropriate utilization of the emergency treatment room is a function of the day of the week the patient was seen in the emergency treatment room.

3. Inappropriate utilization of the emergency treatment room is a function of the shift that the patient presented to the emergency treatment room.

a. Inappropriate utilization is a function of day shift.

b. Inappropriate utilization is a function of evening shift.

c. Inappropriate utilization is a function of night shift.

4. Inappropriate utilization of the emergency treatment room is a function of the category that the patient was triaged into.

a. Inappropriate utilization is a function of emergent triage category.

b. Inappropriate utilization is a function of urgent triage category.

c. Inappropriate utilization is a function of non-urgent triage category.

5. Inappropriate utilization of the emergency treatment room is a function of the patient's beneficiary category.

a. Inappropriate utilization is a function of being active duty.

## Inappropriate ETR visits

30

- b. Inappropriate utilization is a function of being a dependent of active duty.
- c. Inappropriate utilization is a function of being retired.
- d. Inappropriate utilization is a function of being the dependent of a retiree.
- e. Inappropriate utilization is a function of all other beneficiary categories.

#### Methods and Procedures

The guidelines established by the American College of Emergency Physicians was used to determine the appropriateness of all visits to the DeWitt Army Community Hospital emergency treatment room during two one week periods. A retrospective record review was conducted on all cases to determine the appropriateness of each visit.

#### Sample Selection

The study sample consisted of all patients who presented themselves to the DACH Emergency Treatment Room during two one-week periods. One week of patient visits was studied in the months of April and October. The months of April and October were chosen due to the seasonal variance of the two periods. All patient encounters in the Emergency Treatment Room were included in the initial sample. However, sixty-one records had to be excluded from the study because the patient left the ETR without being seen by a health care provider. Both pediatric and adult patients of all beneficiary categories were included in the study.

No alteration to established ETR procedures were suggested for the period of this study. Each patient

was triaged by ETR personnel prior to examination by an ETR provider. In addition, ETR personnel conducted a thorough history of each patient, recorded all patient reported symptoms and demographics, and conducted a thorough examination of each patient. All information obtained during the triage, history taking, and examination phases of the patient encounter was recorded on the Standard Form 558 (Appendix B).

#### Study Design

Using the ACEP guidelines, appropriateness of use of the emergency treatment room at DeWitt Army Community Hospital was determined for all visits (n = 1229) made during two one-week periods, one week in April 1990, the other week in October 1990. Because of the effort required to coordinate the study with personnel in the Emergency Treatment Room, I decided to include all visits during a shorter period rather than sample visits made over a longer period.

Determination of appropriateness of use was based on a retrospective record review by two independent reviewers. Records were exchanged between the two reviewers, and each reviewer independently examined

each record. Records were initially grouped as "appropriate", "inappropriate", or "requiring further review". Meeting together, the two reviewers met with a board certified emergency room physician to discuss and categorize those records requiring further review until a consensus was reached.

Prior to independently reviewing records (and based on the ACEP guidelines), the reviewers agreed on criteria that each would use in determining appropriateness of the visit. Specifically all visits would be considered appropriate if they fell into one of the following categories: 1) admission to the hospital; 2) transportation to the emergency treatment room via ambulance or emergency medical services vehicle; and 3) referred by a physician to the emergency room.

Inappropriate visits were all other visits which did not meet the ACEP guidelines for an appropriate visit to a hospital emergency room. Generally visits requiring further review were those for which symptoms were present for more than 72 hours, but some aspect of the patient's condition had changed, prompting the visit.

## Data Collection

The following data was also extracted from the Standard Form 538 for inclusion in the study: the time the patient presented to the ETR; the time the patient was seen by an ETR provider; the time the patient was released from the ETR; the patient's beneficiary category; the patient's initial triage category; the patient's disposition; the patient's sex and age; and the patient's mode of transportation to the ETR.

All records were coded for statistical analysis by the two independent reviewers. The two reviewers independently scored all Standard Forms 538's using dichotomous variables (1 if present, 0 otherwise) for all variables except the waiting time for the patient to see a provider, the patients total time in the ETR and the patient's age. The time the patient presented for triage, the time the patient was seen by a provider, and the time the patient was released from the ETR were recorded in 24 hour time. Time variables were used to determine the elapsed patient waiting times.

The patient's beneficiary category was coded 1 if yes, 0 otherwise for each category (active duty,



dependent of active duty, retired, dependent of retired, and other). The initial triage level (emergent, urgent, and non-urgent) was coded 1 if yes, 0 otherwise. The patient's sex was coded 1 if female, 0 if male. The patient's age was recorded in whole years (patients whose age was under 1 year were recorded as 0). The patient's mode of transportation to the ETR was coded 1 if by ambulance or Emergency Medical System (EMS) vehicle, 0 otherwise. The dependent variable "inappropriate visit" was coded 1 if the visit was determined to be inappropriate, 0 otherwise. A randomized block analysis of variance was conducted using the independent scores of the two reviewers to determine the internal consistency of the scoring by computing Cronbach's alpha. An inter rater reliability factor of 94 percent was found for this study. Although Buesching's study employed a similar methodology, he failed to report an inter-rater reliability factor (Beusching, et al, 1995).

This method of data collection afforded ease of replication for the researcher due to the simplicity of the data collection instrument. All information was recorded by health care professionals at the time each

patient presented for treatment. Additionally, by using this data collection instrument, the ethical rights of the patients were protected in that no social security information or names were used during the coding portion of the study.

Descriptive statistics were calculated on all variables. With the exception of the time and age variables, all variables were coded dichotomously, thereby allowing percentages to be assigned. In addition, inferential statistics were also computed using the Microstat computer software program. A full regression was conducted on all independent variables and a correlation matrix created using all variables.

### Statistical Analysis

#### Descriptive Statistics

In order to gain a better knowledge of the sample being studied, descriptive statistics were computed from the data collected. The sample population consisted of 1229 patient encounters during the two one week periods of the study.

The Dependent Variable

The inappropriateness or appropriateness of a patient visit to the Emergency Treatment Room was determined by comparing a description of the patients presenting complaint and vital signs against the American College of Emergency Physicians guidelines for what constitutes an emergency visit. In addition, patients who were transported to the emergency treatment room via ambulance or EMS vehicle were deemed to be an appropriate visit, and patients who were referred to the ETR by a physician along with any patients who were admitted to the hospital following presentation to the emergency treatment room. Consequently, 503 patient visits or fifty-seven percent of the sample were determined to be appropriate visits to the emergency room, while the remaining 526 patient visits or forty-three percent of the sample were determined to be inappropriate. (Appendix C)

Time Factors

The average waiting time for a patient to see a health care provider from the point he/she presented for triage was 36.43 minutes. The minimum waiting time was one minute, while the longest waiting time was

three hundred and twenty-five minutes. The average time that a patient spent in the ETR from the point the patient presented for triage to when he/she left the ETR was 39.7 minutes. The minimum amount of time that a patient spent in the ETR was four minutes, while the maximum amount of time was 120 minutes. (Appendix D)

#### Characteristics of the Sample Population

The average age of patients in the sample population was 25.39 years. The youngest patient seen was several weeks old. The most elderly patient was ninety-four. Two hundred and thirty one patients or nineteen percent were five years or younger. Two hundred and ninety-six or twenty four percent were six to seventeen years old. Four hundred and seventy-four or thirty-eight percent of the patient population were eighteen to forty-four years old. One hundred and fifty-five or thirteen percent of the sample population was forty-five to sixty-four years old. The remaining six percent of the sample or seventy-three patients were over the age of sixty-five.

The sample population was predominately female. Fifty-three percent or 647 of the patients were female and 582 or forty-seven percent were male.

Seven hundred and eight dependents of active duty made up 58 percent of the sample population. The next largest beneficiary category in the sample population was active duty patients with 227 or 19 percent of the sample. The active duty beneficiary category was followed by dependents of retirees with 161 or 13 percent of the sample. Retirees made up 9 percent of the sample population with 105. The remaining 2 percent of the sample population belonged to other patient beneficiary categories such as civilian emergencies, dependents of deceased, and foreign nationals. (Appendix E)

#### Day and Time of Presentation to the ETR

Data for the study was collected over fourteen days. Four of these days were a weekend day and one was a holiday. The only clinic open during a weekend or holiday at DeWitt Army Community Hospital during the study period was the Emergency Treatment Room. Five hundred and sixty-nine or 46 percent of the total patient visits to the emergency treatment room during the study period were made on a weekend or holiday. Six hundred and sixty or 54 percent of the total patient visits were made during the remaining ten days

of the study. There was a great degree of variability between the time of day that patients presented to the emergency treatment room. Three hundred and eighty-six patients, or 31 percent of the sample population presented to the emergency treatment room during the day shift (0700 - 1459 hours). Six hundred and sixty-five patients, or 54 percent of the sample population presented to the emergency room during the evening shift (1500 - 2259 hours). The remaining fourteen percent of the sample population, or one hundred and seventy-eight patients, presented to the emergency treatment room during the night shift (2300 - 0659 hours). (Appendix F)

#### Triage Categories

All patients were triaged into one of three separate triage categories; emergent, urgent, and non-urgent. Only one percent or 14 patients were categorized as emergent. Forty-five percent or 552 patients were categorized as urgent. Finally, the majority of all the patients, fifty-four percent or six hundred and sixty-three, were seen during the study period were categorized as non-urgent. (Appendix G)

Control Variables

Two control variables were selected for inclusion in this study; the patients mode of transportation to the emergency treatment room and whether or not the patient was admitted to the hospital from the emergency treatment room. Only 47 patients or four percent of the sample population was transported to the emergency treatment room via ambulance or an Emergency Medical Services vehicle. The remaining 96 percent of the sample population used some other means of transportation, such as driving themselves, having a parent or friend drive them, or walking. In addition, only 83 patients, or seven percent of the sample population was admitted to the hospital following their presentation to the Emergency Treatment Room. Several patients were admitted for chest pain, emergency surgical procedures, and observation. (Appendix H)

Inferential Statistics

A correlation matrix was created for all nineteen variables used in the study (Appendix I).

Statistically significant correlations with the dependent variable were found at the  $P < .05$  level for

the independent variables provider waiting time, total time, weekday, day shift, ambulance, sex, age, emergent triage category, urgent triage category, non-urgent triage category, admission, dependent of active duty, retired, and dependent of retired.

Additionally, Chi Square analysis was performed between the dependent variable and each of the independent variables. The overall rate of inappropriateness was 42.7 percent. Cross tabulation of appropriateness of visit with other study variables identified several high-rate subgroups (Table 1). These subgroups were as follows: 1) those patients who were initially triaged into the non-urgent category (69.83%); 2) children aged five years or younger (60.17%); 3) patients who presented to the emergency room on a weekend or holiday (49.56%); and 4) patients whose beneficiary category was dependent of active duty (46.75%). These variations in the rate of inappropriate visits were statistically significant at the  $P < .01$  level or better.



## Discussion

The reduced use of hospital emergency rooms has been remarkably achieved by Health Maintenance Organizations. Success can be attributed to the availability of a 24-hour advice nurse. These nurses have been specially trained to 1) identify those situations in which emergency intervention is necessary; 2) provide treatment advice for those situations for which home management is suitable; and 3) refer those patient for subsequent appointments in a provider's office during regular duty hours. As part of this network, an urgent care after-hours clinic is also available to treat such diagnoses as sore throats, ear infections, sinus infections, lacerations, etc. Because of the availability of these alternatives, patients in an HMO rarely find it necessary to use a non-member hospital emergency room.

The access of the military population to care depends on their proximity to a Military Treatment Facility (MTF). For routine checkups and prescription renewals, the outpatient clinic is generally the point of entry. In some MTFs appointments in advance are required in the outpatient clinic. It is not uncommon

## Inappropriate ETR visits

11

to have to make the request 2-3 days in advance. The patients are advised to go to the emergency room if their condition is such that a delay of 2-3 days is not feasible. In other MTFs, where appointments are not available in the outpatient clinic, patients can experience waiting times of two to six hours to be seen by a provider on a walk-in basis. If the patient can not afford such long waiting times during duty hours, he/she may choose to utilize the emergency room after duty hours. A wait of at least 4 hours in the MTF emergency room is not uncommon. In general, the MTFs do not offer the alternative of an urgent care clinic that is offered in many HMOs. In most instances the service member or his family member only has the choice of routine outpatient care or the emergency room.

It is evident from the results of this study that DeWitt Army Community Hospital suffers from a high inappropriate utilization rate of it's emergency treatment room. In order to alleviate this problem at DACH, I propose a three stage model of health care services be adopted for after hours care. The three

components of this model would be: 1) an Advice/Triage Telephone Service; 2) an After Hours Clinic; and 3) the Emergency Treatment Room.

The first cornerstone of the model involves the creation and implementation of an Advice/Triage Telephone Service at DeWitt Army Community Hospital. An Advice/Triage Telephone Service could be set up similar to those already in operation at other military and civilian facilities. This service would serve several functions for the patient population of DACH. Such a service would allow for the efficient triage of patients before they even arrived at the hospital, directing them to the most appropriate setting for care. This would result in reduced patient waiting time in the ETR, more appropriate utilization of hospital resources, and increased patient satisfaction. This service would also allow parents an alternative to hospital based care by giving them the means to obtain medical advice in order to manage their child's illness or injury at home if appropriate. The Advice/Triage Telephone Service could be staffed by qualified emergency room trained nurses using established protocols of emergency medicine.

The second element of the model is the establishment of an After Hours Clinic. The purpose of this clinic would be to treat those patients whose medical complaint could be handled more appropriately in a primary care setting than the Emergency Treatment Room. Once operational, this After Hours Clinic could reduce the undue burden of most inappropriate visits to the Emergency Treatment Room. This clinic would be accessible to the patient population serviced by DACH after normal duty hours when most clinics have closed and on weekends and holidays when the ETR is the only available alternative for care. The After Hours Clinic should be tailored to meet the specific needs and patient demands of the Fort Belvoir and surrounding communities. According to the results of this study, this would require an emphasis on pediatric care as well as care to other age groups within the dependent of active duty beneficiary category. Given that the majority of these patients are CHAMPUS eligible, the After Hours Clinic could be effectively staffed by CHAMPUS Partners. This type of staffing would require fewer personnel resources from within the already strained system of DACH. The After Hours Clinic would

operate similarly to the current General Outpatient Clinic and Pediatric Clinic. Patients could obtain care in the After Hours Clinic 1) by appointment; 2) referral from the emergency treatment room; or 3) referral from the Advice/Information Telephone Triage Service.

The third element of the model involves the more appropriate utilization of the current hospital Emergency Treatment Room. This service would be left to operate as a true emergency service if inappropriate visits could be directed elsewhere within the system via the Advice/Triage Telephone Service and the After Hours Clinic.

#### The Model

The Advice/Triage Nurse will be the gate opener to the appropriate level of care according to the patient complaint. Upon the presentation of the patient at the After Hours Clinic or ETR there will be an initial triage to ensure that the patient is in the most appropriate setting. Beneficiaries will be instructed that the preferred method to access care and/or seek medical advice after normal duty hours, 1630-0730

## Inappropriate ETR visits

48

Monday through Friday and weekends/holidays, will be to telephone the Advice/Triage Nurse prior to departing for DeWitt Army Community Hospital.

In keeping with the model patients will call the Advice/Triage Nurse directly. The Advice/Triage Nurse will listen to the complaint and ask a series of prescribed questions and then evaluate the complaint against the criteria of an established protocol. Based on this evaluation the Advice/Triage Nurse can either provide the necessary information for the patient to manage the complaint at home or instruct the patient to come to the facility to access care through either the ETR or After Hours Clinic. Patients who are given advice for home management of an illness or injury will be instructed to call back if symptoms worsen or persist over 24 hours.

The Advice/Triage Nurse may also make the determination of the need for a patient to be seen by a provider in the facility within 24 hours. Those complaints which fall under the approved guidelines of the American College of Emergency Physicians for what constitutes an emergency will be directed immediately to the ETR. If deemed necessary, emergency patient

## Inappropriate ETR visits

49

transport will be arranged by the Advice/Triage Nurse. Those patients who require immediate medical attention for non-emergent complaints will be directed to DACH's After Hours Clinic. All patients who report to the ETR or the After Hours Clinic will be triaged upon presentation to ensure that they are at the most appropriate setting for care. Additionally, those patients whose medical complaint does not require non-duty hour care will be instructed to access care at DACH through the appropriate clinic during normal duty hours.

## Inappropriate ETR visits

59

### Conclusion

In order to alleviate the problem of inappropriate utilization of the emergency treatment room, patients must be given an appropriate alternative to seeking care after duty hours. I propose that an After Hours Clinic, tailored to the specific needs of the patient population served by DeWitt Army Community Hospital, be implemented as an alternative to the Emergency Treatment Room. In addition, an Advice/Triage Telephone Service should be created to direct patients to the most appropriate setting for care. These two additional services would operate in conjunction with the current Emergency Treatment Room in operation at DeWitt Army Community Hospital in order to better meet the needs of its patient population.



References

- Abramowitz, S., Joy, S. A., & Yurt, R. W. (1989).  
Emergency room visit time: Changes over a 18 year  
period. New York State Journal of Medicine, 8,  
446-449.
- Benz, J. R. & Shank, J. C. (1982). Alteration of  
emergency room usage in a family practice residency  
program. The Journal of Family Practice, 15,  
1135-1139.
- Bowles, R. A. Delay as a rationing device.  
International Journal of Social Economics, 2, 90-104.
- Broome, M. E. (1986). Telephone protocols for  
pediatric assessment and advice. Journal of  
Emergency Nursing, 12, 142-146.
- Buesching, D. P., Jablonowski, A., Vesta, E., Dilts,  
W., Runge, C., Lund, J., & Porter, R. (1985).  
Inappropriate emergency department visits. Annals of  
Emergency Medicine, 14, 872-876.
- Culyer, A. J., & Cullis, J. G. Some economics of  
hospital waiting lists in the NHS. Journal of Social  
Politics, 5, 239-264.

- Daley, W. E., Leaning, J., & Braen, G. R. (1987).  
Prehospital emergency services and health maintenance  
organizations: An HMO perspective. The Journal of  
Emergency Medicine, 6, 333-338.
- Davidson, S. (1978). Understanding the growth of  
emergency department utilization. Medical Care, 18,  
122-132.
- Derlet, R. W. & Nishio, D. A. (1990). Refusing care to  
patients who present to an emergency room. Annals of  
Emergency Medicine, 19, 262-267.
- Dunn, J. M. (1985). Warning: Giving telephone advice  
is hazardous to your professional health. Nursing,  
15 (8), 40-41.
- Fox, C., Rodriguez, C., & McSwain, N. E. (1981). EMT  
telephone triage. The EMT Journal, 5, 410-415.
- Foroughi, D., & Chadwick, L. (1989). Accident and  
emergency abusers. Practitioner, 233, 657-659.
- Geller, R. J., Fisher, J. G., Leeper, J. D., &  
Ranganathan, S. (1988). American Poison Control  
Center: Still not all the same. Annals of Emergency  
Medicine, 17, 599-603.

Gifford, M. J., Franaszek, J. B., & Gibson, G. (1990).

Emergency physicians' and patients' assessments:

Urgency of need for medical care. Annals of

Emergency Medicine, 2, 502-507.

Hansagi, M., Carlsson, B., Olsson, M., & Edhag, O.

(1987). Trial of a method of reducing inappropriate

demands on a hospital emergency department. Public

Health, 101, 99-105.

Hossfeld, G., & Ryan, M. (1989). HMOs and utilization

of emergency medical services: A metropolitan

survey. Annals of Emergency Medicine, 18, 374-377.

Hurley, R. E., Freund, D. A., & Taylor, D. E. (1989).

Emergency room use and primary care case management:

Evidence from four medicaid demonstration programs.

American Journal of Public Health, 79, 843-847.

Jacobs, A. R., Gavett, J. W., & Wershinger, R. (1971).

Emergency department utilization in an urban

community. Journal of the American Medical

Association, 216, 307.

Katz, H. P., Pozen, J., & Mushlin, A. I. (1978).

Quality assessment of a telephone care system

utilizing non-physician personnel. American Journal

of Public Health, 68, 31-38.

- Knowles, P. J., & Cummins, R. O. (1984). ED medical advice telephone calls: Who calls and why? Journal of Emergency Nursing, 10, 283-286.
- Levy, J. C., Rosekrans, J., Lamb, G. A., Friedman, M., Kaplan, D., & Strasser, P. (1979). Development and field testing of protocols for the management of pediatric telephone calls: Protocols for pediatric telephone calls. Pediatrics, 64, 558-563.
- Levy, J. C., Strasser, P. H., Lamb, G. A., Rosekrans, J., Friedman, M., Kaplan, D., & Sanofsky, P. (1980). Survey of telephone encounters in three pediatric practice sites. Public Health Reports, 95, 324-328.
- Nelson, A. F., Nelson, M. A., Shank, J. C., & Thompson, F. L. (1979). Emergency room misuse by medical assistance patients in a family practice residency. The Journal of Family Practice, 9, 341-345.
- Perrin, E. C., & Goodman, H. C. (1978). Telephone management of acute pediatric illnesses. New England Journal of Medicine, 298, 130-135.
- Roglieri, J. L. (1975). Multiple expanded roles for nurses in urban emergency rooms. Archives of Internal Medicine, 135, 1401-1404.

- Shah, C. P., Egan, T. J., & Bain, H. W. (1980). An expanded emergency service: Role of telephone services in the emergency department. Annals of Emergency Medicine, 9, 617-623.
- Shortliffe, E. C., Hamilton, T. S., & Nordin, E. H. (1958). The emergency room and the changing pattern of medical care. New England Journal of Medicine, 258, 20.
- Simon, H., Reisman, A., Javad, S., & Sachs, D. (1979). An index of accessibility for ambulatory health services. Medical Care, 17, 894-901.
- Solon, J. A., & Rigg, R. D. (1972). Patterns of medical care among users of hospital emergency units. Medical Care, 10, 60-72.
- Stewart, M. C., Savage, J. M., Scott, M. J., & McClure, B. G. (1989). Primary medical care in a paediatric accident and emergency department. The Ulster Medical Journal, 58, 29-35.
- Strasser, P. H., Levy, J. C., Lamb, G. A., & Rosekrans, J. (1979). Controlled clinical trial of pediatric telephone protocols. Pediatrics, 64, 553-557.

- Stratmann, W. G., & Ullman, R. (1975). A study of consumer attitudes about health care. The role of the emergency room. Medical Care, 13, 1033-1042.
- Trautlein, J. J., Lambert, R. L., & Miller, J. (1984). Malpractice in the emergency department- review of 200 cases. Annals of Emergency Medicine, 13, 709-711.
- Turner, S. R. (1981). Golden rules for accurate triage. Journal of Emergency Nursing, 7, 153-155.
- Ullman, R., Block, J. A., & Stratman, W. G. (1975). An emergency rooms' patients: Their characteristics and utilization of hospital services. Medical Care, 13, 1011-1020.
- Vaughn, P. B., Wolcott, B. W., Dupont, S. (1980). Effective algorithm-based triage and self-care protocols: Quality medicine at lower costs. Annals of Emergency Medicine, 9, 31-36.
- Vaughn, H. F., & Gamester, C. E. (1966). Why patients use hospital emergency departments. Hospitals, 40, 59.
- Vayda, E., Gent, M., & Hendershot, A. (1975). Emergency department use at two Hamilton hospitals. Canadian Medical Association, 112, 961-965.

- Verdile, V. P., Paris, P. M., Stewart, R. D., &  
Verdile, L. A. (1989). Emergency department  
telephone advice. Annals of Emergency Medicine, 19,  
279-282.
- Weinerman, E. R., Ratner, R. S., & Robbins, A. (1966).  
Yale studies in ambulatory medical care:  
Determinants of use of hospital emergency services.  
American Journal of Public Health, 56, 1037-1056.
- Wolcott, B. W. (1979). What is an emergency? Depends  
on whom you ask. Journal of the American College of  
Emergency Physicians, 8, 241-243.
- Wolcott, B. W. (1989). For whom the (phone) tolls.  
Annals of Emergency Medicine, 19, 323.
- Yeatman, G. W. (1981). Twenty-four hour telephone  
triage: An expedient to ambulatory care. Military  
Medicine, 146, 249-253.

Table 1. Relation of Appropriateness of Emergency Room Visit to Other Study Variables

	APPROPRIATENESS				CHI SQUARE
	YES		NO		
	N	%	N	%	
Sex					NS*
Male	350	60.14	232	39.86	
Female	253	54.56	294	45.44	
Age					P<.001
0-5	92	39.83	139	60.17	
6-19	181	61.15	115	38.85	
20-44	271	57.17	203	42.83	
45-64	106	68.39	49	31.61	
65++	51	69.86	22	30.14	
Day of Week					P<.001
Weekend/Holiday	287	50.44	282	49.56	
Weekday	416	63.03	244	36.97	
Time of Day					NS
Day Shift	245	63.47	141	36.53	
Evening Shift	369	55.49	296	44.51	
Night Shift	90	50.56	88	69.83	
Triage Category					P<.001
Emergent	14	100.00	0	00.00	
Urgent	489	88.59	296	44.51	
Non-Urgent	200	30.17	463	69.83	
Beneficiary Category					P<.01
Active Duty	132	58.15	95	41.85	
Dep-Active Duty	377	53.25	331	46.75	
Retired	71	67.62	34	32.38	
Dep-Retired	106	65.84	55	34.16	
Other	17	60.17	11	39.29	

\*NS = Not Significant



Inappropriate ETR visits

59

Appendix A

The American College of Emergency Physicians Definition  
of a Bona Fide Emergency Room Visit

### BONA FIDE EMERGENCY DEFINED\*

We feel that a patient has made an appropriate visit to an emergency department when: An unforeseen condition of a pathophysiological or psychological nature develops which a prudent layperson, possessing an average knowledge of health and medicine, would judge to require urgent and unscheduled medical attention most likely available, after consideration of possible alternatives, in a hospital emergency department. This would include:

1. Any condition resulting in admission of the patient to a hospital or nursing home within 24 hours
2. Evaluation or repair of acute (less than 72 hours) trauma
3. Relief of acute or severe pain
4. Investigation or relief of acute infection
5. Protection of public health
6. Obstetrical crises and/or labor
7. Hemorrhage or threat of hemorrhage
8. Shock or impending shock
9. Investigation and management of suspected abuse or neglect of person which, if not interrupted, could result in temporary or permanent physical or psychological harm
10. Congenital defects or abnormalities in a newborn infant, best managed by prompt intervention
11. Decompensation or threat of decompensation of vital functions such as sensorium, respiration, circulation, excretion, mobility or sensory organs
12. Management of a patient suspected to be suffering from a mental illness and posing an apparent danger to the safety of himself, herself or others
13. Any sudden and/or serious symptom(s) which might indicate a condition which constitutes a threat to the patient's physical or psychological well-being requiring immediate medical attention to prevent possible deterioration, disability or death.

\*Adopted by the Board of Directors of the American College of Emergency Physicians on October 23, 1982.

## **GUIDELINES FOR DETERMINATION OF A BONA FIDE EMERGENCY FOR MEDICARE BENEFICIARIES**

The American College of Emergency Physicians (ACEP) proposes that a three step system be used to identify "bona fide" emergency services when a claim for emergency physician services provided in a hospital outpatient setting is generated and processed. The three steps are outlined as follows:

1. Emergency department levels of service codes 90500 (Minimal) and 90505 (Brief) would not be considered "bona fide" emergency services for outpatient reimbursement limitation purposes.
2. Emergency department levels of service codes 90510 (Limited), 90515 (Intermediate), 90517 (Extended), and 90520 (Comprehensive) would routinely be considered "bona fide" emergency services when indicated (through the use of a modifier or by checking box 16A on the HCFA 1500 claim form) by the physician.
3. If, after applying steps 1 and 2 above, the Medicare carrier is unable to determine whether or not "bona fide" emergency services were provided, the following list of diagnoses/signs/symptoms/complaints would be referenced to make an initial determination (subject to further review of medical records, evidence, or documentation) as to the probability that a "bona fide" emergency condition existed. This list is not intended to be used in place of actual circumstances surrounding the emergency department visit, the physician's medical judgement, or other factors which should be taken into account before making a final "bona fide" emergency determination.

### **A. V. Shunt Malfunction (Hemodialysis)**

Abdominal aneurysm, ruptured

Abdominal distention

acute

Abdominal distention, gaseous

Abdominal pain

Abortion, self-induced, complete or

incomplete

complicated by-

infection

hemorrhage

tissue or organ damage

renal failure

metabolic disorder

shock

embolism

other complications

Abortion, spontaneous, complete or incomplete:

complicated by -

infection

hemorrhage

tissue or organ damage

renal failure

metabolic disorder

shock

embolism

other complications

Abortion, threatened

affecting fetus or newborn

Abrasion, eye

Abscess and cellulitis of orbit

Acidosis, diabetic

Acidosis, other -

lactic

metabolic NEC

with respiratory acidosis

late, of newborn

respiratory

complicated by

metabolic acidosis

metabolic alkalosis

Adams-Stokes syndrome

Addisonian crisis

Adenitis, mesenteric

Adenopathy

AIDS with

Airway Obstruction NEC

Alcoholic hallucinosis

Alcohol withdrawal symptoms NEC

Allergic purpura

Allergic reaction

Altered mental status

Anal fissure

Anal fistula

Anaphylactic shock

Aneurysm

Angina pectoris

Angina, unstable

Angioneurotic edema

Anuria

Anxiety  
    depression  
    generalized  
    hysteria  
    in  
    acute stress reaction  
    transient adjustment reaction  
    panic attack  
Aortic Aneurysm, dissecting  
Aortic Aneurysm, ruptured  
Apnea  
Appendicitis  
Arrhythmia, Cardiac -  
    conduction disorders  
    other disorders  
Arterial embolism  
Asphyxia  
Asthma  
Atelectasis  
Atrial flutter  
Automatic implantable defibrillator malfunction  
Balanitis  
Biliary calculus  
Blacking out  
Bladder disorder, unspecified  
Bladder obstruction -  
    congenital  
Bleeding tooth socket  
Blindness  
Blood clots  
Blood-dyscrasia  
Blood poisoning; Septicemia  
    meningococcal septicemia  
    anthrax septicemia  
    herpetic septicemia  
Blurred vision  
Brachial arteritis  
Bradycardia, reflex  
Breathing difficulty  
Bronchiolitis  
Bronchitis, acute -  
    unqualified  
    chronic with acute exacerbation  
Bundle branch block  
Bursitis  
Cancer, with severe pain or bleeding

- Cardiac arrest
  - during or resulting from surgery
- Cardiac arrhythmias -
  - conduction disorders
  - other disorders
- Cardiomyopathy
- Cardiospasm -
  - congenital
- Cerebral -
  - embolism
  - hemorrhage
  - infarct
  - ischemia, transient
  - ischemia, generalized
  - thrombosis
- Cerebrovascular accident (CVA)
  - insufficiency, transient
  - insufficiency, generalized
- Chest pain
- Choking sensation
- Cholecystitis
- Circulatory disorder, unspecified
- Cirrhosis, alcoholic
  - non-alcoholic
- Colic -
  - abdominal
  - renal
- Colitis -
  - amebic
  - infectious
  - ischemic
  - non-infectious
  - radiation
  - regional
  - toxic
  - ulcerative
- Collapsed lung
- Colostomy obstruction
- Coma
- Complete heart block
- Congenital heart disease
- Congestive heart failure
- Conjunctivitis
- Convulsions
- Convulsive disorder
- Cor pulmonale
- Costochondritis

- Croup
- Cushing's syndrome
- Cyanosis
- Cystic fibrosis
- Cystitis
- Dacryoadenitis
- Dehydration
- Delirium, acute
- Delirium tremens
- Depression
  - acute
  - anxiety
- Detached retina, with defect
  - without defect
- Diabetes
- Diabetic acidosis
- Diabetic coma
- Difficulty walking
- Dislocation, except fingers or toes
- Diverticulitis -
  - colon
  - esophagus
  - gastric
- Diverticulitis (continued) -
  - small intestine
- Diarrhea - infectious
  - post operative or unspecified
- Dizziness
- Drug overdose
- Drug reaction (except insulin)
- Duodenal ulcer
  - with perforation
  - without perforation
- Duodenitis
- Dyspnea
- Dysuria
- Eclampsia
- Ectopic pregnancy
- Edema -
  - angioneurotic
  - generalized
  - laryngeal
  - penis
  - pulmonary
  - scrotum
- Effusion of joint
- Electrolyte imbalance

Embolism -  
arterial  
cerebral  
pulmonary  
venous  
Emphysema  
Encephalitis - viral  
due to immunization  
non-infectious  
Endocarditis  
rheumatic  
Endometriosis  
Enteritis -  
ischemic  
regional  
toxic  
Epileptic convulsions  
Epistaxis  
Esophageal obstruction  
Esophageal rupture  
Esophageal varices  
Esophagospasm  
Eustachitis  
External otitis  
False labor  
Fever - Rocky Mountain  
Fever - Scarlet  
Fibrillation, ventricular  
Frequent urination  
Food poisoning  
Fracture, except fingers or toes  
Gastric ulcer -  
with perforation  
Gastric ulcer -  
without perforation  
Gastritis; Gastroenteritis -  
viral  
infectious  
non-viral  
radiation  
salmonella  
toxic  
non-infectious  
Gastrointestinal Obstruction -  
congenital  
duodenal  
esophageal



Gastrointestinal Obstruction (continued) -

- intestinal
- post operative
- pyloric

Gastrointestinal bleeding

- adult
- newborn

Gastrojejunal ulcer -

- perforated
- without perforation

Giant Urticaria (Hives)

Glaucoma

Glomerulonephritis, acute

- with lesion

Goiter

- toxic
- diffuse

Grand mal epilepsy

Headache

Heart block

Heart disease -

- congenital
- hypertensive

Heart disorder, unspecified

Heat prostration

Hematemesis

Hematomyelia

Hematuria

Hemophilia

Hemoptysis

Hemorrhage -

- cerebral
- esophageal varices
- gastrointestinal adult
- newborn
- subarachnoid
- tooth socket

Hemorrhage of ulcer, duodenal

- with perforation

Hemorrhage of ulcer, gastric

- with perforation

Hemorrhage of ulcer, gastrojejunal

- with perforation

Hemorrhage of ulcer, peptic

- with perforation
- without perforation

Hemorrhage, vaginal, non-pregnant  
    early pregnancy  
    antepartum  
    complicating delivery  
    post partum following abortion  
    post partum delivery  
Hemorrhage with gastritis or duodenitis  
Hemorrhoids with strangulation  
Hepatitis, acute  
    alcoholic  
    neonatal  
    unspecified  
    viral  
Hernia  
    inguinal  
Herniated intervertebral disc  
Herpes Simplex  
Herpes zoster  
Hives  
Hyperemesis gravidarum  
Hyperpyrexia (fever)  
Hypertension  
Hypertensive crisis  
Hypertensive heart disease  
Hypertrophy of tonsils and adenoids  
Hyperventilation  
Hypoglycemia, unspecified  
Hypoprothrombinemia, acquired  
    newborn  
Hysterical neuroses  
Ileitis  
Incarcerated hernia  
    inguinal  
Infarction -  
    cerebral  
    impending MI  
    myocardial (MI)  
    pulmonary  
Infection -  
    streptococcal  
    upper respiratory  
Insufficiency -  
    cerebrovascular  
    pulmonary  
Insulin reaction  
Intermenstrual pain  
Internal derangement of joints

Intervertebral disc  
    perforation  
Intestine, unspecified disorder  
Iritis  
Irritable bowel syndrome  
Jaundice  
    adult  
    newborn  
Ketoacidosis  
Keratitis  
    syphilitic  
Kidney and ureter, unspecified disorder  
Labor  
    false  
    premature  
    threatened premature  
Labyrinthitis  
Laryngeal edema  
Laryngitis  
Left Bundle Branch Block  
Leukemia  
Loss of consciousness  
Lymphadenitis (except mesenteric)  
Lymphangitis  
Malfunction -  
    pacemaker  
    automatic implantable defibrillator  
    shunt  
Manic depressive  
Mastoiditis  
Medications, reactions to (except insulin)  
Meniere's disease  
Meningitis -  
    coccidioidal  
    meningococcal  
    mumps  
    unspecified  
    viral  
Mesenteric adenitis  
Migraine  
Miscarriage  
Muscle cramp  
Myasthenia gravis  
Myelitis  
Myositis, infective  
Nasal Hemorrhage

- Nausea, severe or persistent
  - with diarrhea
- Nephrolithiasis
- Neoplasms, malignant
- Neuralgia, neuritis, unspecified
- Nosebleed
- Obstruction -
  - airway
  - colostomy
  - GI tract, congenital
  - duodenal
  - esophageal
  - intestinal
  - post operative
  - pyloric
  - urinary tract, bladder
  - congenital
  - unspecified
  - ureter
  - vena cava
- Occlusive disease of artery
- Oculomotor disturbance
- Omphalitis
- Ophthalmic herpes zoster
- Orchitis
- Otitis -
  - external
  - media
- Otorrhagia
- Ovarian cyst
- Overdose
- Pain -
  - abdominal
  - back
  - breast
  - chest
  - female genital organs
  - in or around eye
  - joint
  - muscle
  - neck
  - penile
  - testicular
- Painful respiration
  - chest wall syndrome
- Palpitations
- Pancreatitis

- Paranoia
- Paranoid schizophrenia
- Parotitis
  - infectious
  - non-infectious
- Paroxysmal atrial tachycardia
- Pelvic inflammatory disease
- Peptic ulcer
  - perforated
- Perforated internal organ
- Pericarditis
- Peritonitis
- Peritonsillar abscess
- Pharyngitis
  - vesicular
- Phimosis
- Phlebitis
- Pleurisy
- Pleuritis
- Pleurobronchitis, acute
- Pneumonia
- Pneumothorax
- Poison -
  - ivy
  - oak
  - sumac
- Poisoning -
  - Blood
  - Food
  - Overdose of Drug
- Polymyositis
- Post-partum hemorrhage -
  - following abortion
  - following delivery
  - puerperium sepsis
- Pregnancy - abortion, self-induced
  - abortion, spontaneous
  - eclampsia
  - hemorrhage
  - hyperemesis gravidarum
  - labor, false
  - premature
  - threatened premature
- Prostate, unspecified disorder
- Prostatitis
- Psychophysical disorder
- Psychophysiological reaction

Puerperal Subinvolution of Uterus  
 Puerperium sepsis  
 Pulmonary -  
     edema  
     embolism  
     fibrosis  
     infarct  
     insufficiency  
 Pyelitis; pyelonephritis  
 Pylorospasm  
 Pyuria  
 Quinckes Edema  
 Renal -  
     colic  
     failure  
 Respiratory arrest  
 Respiratory distress syndrome  
 Retention - urinary  
 Rheumatic pericarditis  
 Rheumatism  
 Right Bundle Branch Block  
 Rocky mountain spotted fever  
 Ruptured -  
     esophagus  
     spleen  
     tympanic membrane  
 Salpingitis  
 Scarlet fever  
 Schistosoma hematobium  
 Schizophrenia, paranoid  
 Sciata  
 Seizure  
 Senile dementis with delirium  
 Septicemia  
     herpetic  
     meningococcal  
     anthrax  
 Serum hepatitis  
 Shock  
 Shortness of breath  
 Shunt malfunction  
 Sick cell crisis  
 Speech disturbance  
 Spleen  
 Status epilepticus  
 Stenosis/stricture of salivary gland

- Stomach ulcer
  - perforated
- Stomatitis
- Strangulated hernia
  - inguinal
- Streptococcal infection
- Stroke
- Suffocation
- Suicide ideation
- Sunstroke
- Swelling or mass -
  - eye
  - female genital organ
- Sympathetic ophthalmia
- Symptomatic Heart Disease
- Syncope
- Synovitis and Tenosynovitis
- Syphilis
- Tachycardia -
  - with sinus bradycardia
- Testicular torsion
- Tetanus
- Tetany
- Thoracic Aneurysm, ruptured
- Threatened abortion
- Threatened premature abortion
- Thrombocytopenia
- Thrombophlebitis
- Thrombosis -
  - arterial
  - cerebral
  - intracranial sinus
  - portal vein
  - venous
- Thyroid crisis
- Tic douloureux
- Tonsillitis
- Tooth - bleeding socket
- Toxemia of pregnancy
- Toxic diffuse goiter
- Transient Cerebral Ischemia
- Transitory respiratory distress syndrome
- Tympanic membrane
- Typhoid fever
- Ulcer
- Unconsciousness
- Uremia

- Upper respiratory infection
- Urethritis
  - venera
- Urinary -
  - calculus
  - obstruction, bladder
  - congenital
  - unspecified
  - ureter
  - retention
  - infection
- Urinary tract, unspecified disorder
- Uveitis
- Vaginal bleeding - See "Hemorrhage"
- Van Willabrand Disease
- Vascular lesion of retina
- Venous thrombosis or embolis
- Ventricular -
  - fibrillation
  - tachycardia
- Vertigo
- Vincent's angina
- Vision loss
- Viral -
  - encephalitis
  - hepatitis
- Vomiting and nausea -
  - persistent
  - post operative
- Vomiting and nausea (continued) -
  - severe
- Wheezing
- Whiplash (cervical strain)
- Withdrawal symptoms, syndrome
  - alcohol
  - drug or narcotic
  - steroid NEC
- Wolff-Parkinson-White Syndrome
- Wound infection, post-traumatic
- Wound, open - unspecified
- Xanthoma
- Yeast infection

This document was approved by the American College of Emergency Physicians' Board of Directors on January 27, 1990.



Inappropriate ETR visits

75

Appendix B

Standard Form 558

EMERGENCY CARE AND TREATMENT <small>(Medical Record)</small>						TREATMENT FACILITY <small>(Stamp)</small>	LOG NUMBER
ARRIVAL			TRANSPORTATION TO HOSPITAL <small>(Attach care enroute sheet)</small>		CURRENT MEDS. <small>(Include immunization and other data)</small>	HISTORY OBTAINED FROM	
DATE TIME						<input type="checkbox"/> PATIENT <input type="checkbox"/> OTHER <small>(Specify)</small>	
DAY	MONTH	YR.	<input type="checkbox"/> PRIVATE VEHICLE	<input type="checkbox"/> AMBULANCE		ALLERGIES	
			<input type="checkbox"/> OTHER <small>(Specify)</small>				
PATIENT'S HOME ADDRESS OR DUTY STATION <small>(City, State and ZIP Code)</small>						HOME TELE. NO. <small>(Inc. area code)</small>	
CHIEF COMPLAINT(S) <small>(Include symptom(s), duration)</small>						SEX AGE POSSIBLE THIRD PARTY PAYER?	
						<input type="checkbox"/> YES <input type="checkbox"/> NO	
VITAL SIGNS			DESCRIBE (1) Subjective data <small>(Pertinent History)</small> ; (2) Objective data <small>(Examination - include results of tests and x-rays)</small> ; (3) Assessment <small>(Diagnosis)</small> ; (4) Plan <small>(Treatment/Procedures - include medication given and follow-up)</small>			TIME SEEN BY PROVIDER	
TIME							
BP							
PULSE							
RESP.							
TEMP.							
WT. <small>(Child)</small>							
CATEGORY <small>(See reverse)</small>							
<input checked="" type="checkbox"/> EMERGENT							
<input type="checkbox"/> URGENT							
<input type="checkbox"/> NON-URGENT							
ORDERS		INITS.	TIME				
ASSESSMENT/DIAGNOSIS							
DISPOSITION <small>(Check all that apply)</small>							
<input checked="" type="checkbox"/> HOME		<input checked="" type="checkbox"/> FULL DUTY					
QUARTERS							
<input checked="" type="checkbox"/> 24 Hrs.		<input checked="" type="checkbox"/> 48 Hrs.		<input checked="" type="checkbox"/> 72 Hrs.			
MODIFIED DUTY UNTIL:							
DAY	MONTH	YEAR					
REFERRED TO <small>(Indicate clinic)</small>							
<input checked="" type="checkbox"/> EMERGENCY		<input checked="" type="checkbox"/> TODAY					
<input checked="" type="checkbox"/> 72 HOURS		<input checked="" type="checkbox"/> ROUTINE					
ADMIT. TO HOSP. UNIT/SERVICE							
CONDITION UPON RELEASE							
<input checked="" type="checkbox"/> IMPROVED		<input checked="" type="checkbox"/> UNCHANGED					
<input type="checkbox"/> DETERIORATED							
TIME OF RELEASE:							

**PATIENT'S IDENTIFICATION (Mechanical imprint)  
FOR WRITTEN ENTRIES GIVE: Name - last, first, middle;  
SSN; DOB, service status, name and relation of sponsor or next  
of kin. (IMPORTANT: LIST FACILITY HOLDING TREAT-  
MENT RECORD).**

**SIGNATURE OF PROVIDER AND ID STAMP**

**INSTRUCTIONS TO PATIENT** (Include medications ordered, any limitations and follow-up plans)

## EMERGENCY CARE AND TREATMENT

**Medical Record Copy**

**STANDARD FORM 558 (REV. 6-82)**  
Prescribed by GSA and ICMR  
FPMR (41 CFR) 101-11.806-8

Inappropriate ETR visits

77

Appendix C

Dependent Variable Frequency Distribution

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 8. APP/INAP

PATIENTS WHOSE ETR VISIT WAS DETERMINED TO BE INAPPROPRIATE

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	703	57.20	703	57.20
1.00 <	2.00	526	42.80	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....
.00 <	1.00	703  =====
1.00 <	2.00	526  =====

Inappropriate ETR visits

90

Appendix D

Time Factors Frequency Distributions

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 1. PRO.TIME

PATIENT WAITING TIME TO SEE A PROVIDER

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	15.00	416	33.85	416	33.85
15.00 <	30.00	294	23.92	710	57.77
30.00 <	45.00	162	13.18	872	70.95
45.00 <	60.00	111	9.03	983	79.98
60.00 <	75.00	86	7.00	1069	86.98
75.00 <	90.00	43	3.50	1112	90.48
90.00 <	105.00	44	3.58	1156	94.06
105.00 <	120.00	18	1.46	1174	95.52
120.00 <	135.00	19	1.55	1193	97.07
135.00 <	150.00	10	.81	1203	97.88
150.00 <	165.00	7	.57	1210	98.45
165.00 <	180.00	1	.08	1211	98.54
180.00 <	195.00	2	.16	1213	98.70
195.00 <	210.00	2	.16	1215	98.86
210.00 <	225.00	2	.16	1217	99.02
225.00 <	240.00	2	.16	1219	99.19
240.00 <	255.00	2	.16	1221	99.35
255.00 <	270.00	1	.08	1222	99.43
270.00 <	285.00	1	.08	1223	99.51
285.00 <	300.00	3	.24	1226	99.76
300.00 <	315.00	0	.00	1226	99.76
315.00 <	330.00	3	.24	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....
.00 <	15.00	416  =====
15.00 <	30.00	294  =====
30.00 <	45.00	162  =====
45.00 <	60.00	111  =====
60.00 <	75.00	86  =====
75.00 <	90.00	43  ==
90.00 <	105.00	44  ==
105.00 <	120.00	18  =
120.00 <	135.00	19  =
135.00 <	150.00	10
150.00 <	165.00	7
165.00 <	180.00	1
180.00 <	195.00	2
195.00 <	210.00	2
210.00 <	225.00	2
225.00 <	240.00	2
240.00 <	255.00	2
255.00 <	270.00	1
270.00 <	285.00	1
285.00 <	300.00	3
300.00 <	315.00	0
315.00 <	330.00	3

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 2. TOT.TIME

TOTAL PATIENT TIME IN THE ETR

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	30.00	135	10.98	135	10.98
30.00 <	60.00	332	27.01	467	38.00
60.00 <	90.00	290	23.60	757	61.59
90.00 <	120.00	174	14.16	931	75.75
120.00 <	150.00	111	9.03	1042	84.78
150.00 <	180.00	75	6.10	1117	90.89
180.00 <	210.00	38	3.09	1155	93.98
210.00 <	240.00	22	1.79	1177	95.77
240.00 <	270.00	21	1.71	1198	97.48
270.00 <	300.00	13	1.06	1211	98.54
300.00 <	330.00	8	.65	1219	99.19
330.00 <	360.00	6	.49	1225	99.67
360.00 <	390.00	2	.16	1227	99.84
390.00 <	420.00	1	.08	1228	99.92
420.00 <	450.00	1	.08	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....
.00 <	30.00	135  =====
30.00 <	60.00	332  =====
60.00 <	90.00	290  =====
90.00 <	120.00	174  =====
120.00 <	150.00	111  =====
150.00 <	180.00	75  =====
180.00 <	210.00	38  =====
210.00 <	240.00	22  =====
240.00 <	270.00	21  =====
270.00 <	300.00	13  =====
300.00 <	330.00	8  =====
330.00 <	360.00	6  =====
360.00 <	390.00	2  =====
390.00 <	420.00	1  =====
420.00 <	450.00	1  =====

Inappropriate ETR visits

83

Appendix E

Characteristics of the Sample Population Frequency  
Distributions



----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP2 LABEL: AGE VARIABLES  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 6

VARIABLE: 1. 0-5

PATIENTS AGED 0 TO 5 YEARS

===== VALUE =====	FREQUENCY	PERCENT	....CUMULATIVE....	
			FREQUENCY	PERCENT
.00	998	81.20	998	81.20
1.00	231	18.80	1229	100.00
	TOTAL 1229	100.00		

=====CLASS LIMITS=====	FREQUENCY	.....
.00	998	=====
1.00	231	=====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP2 LABEL: AGE VARIABLES  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 6

VARIABLE: 2. 6-17

PATIENTS AGED 6 TO 19 YEARS

===== VALUE =====	FREQUENCY	PERCENT	....CUMULATIVE....	
			FREQUENCY	PERCENT
.00	933	75.92	933	75.92
1.00	296	24.08	1229	100.00
	TOTAL 1229	100.00		

=====CLASS LIMITS=====	FREQUENCY	
.00	933	=====
1.00	296	=====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP2 LABEL: AGE VARIABLES  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 6

VARIABLE: 3. 18-44

PATIENTS AGED 18 TO 44 YEARS

===== VALUE =====	FREQUENCY	PERCENT	....CUMULATIVE....	
			FREQUENCY	PERCENT
.00	755	61.43	755	61.43
1.00	474	38.57	1229	100.00
	TOTAL 1229	100.00		

=====CLASS LIMITS=====	FREQUENCY	.....
.00	755	=====
1.00	474	=====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP2 LABEL: AGE VARIABLES  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 6

VARIABLE: 4. 45-64

PATIENTS AGED 45 TO 64 YEARS

===== VALUE =====	FREQUENCY	PERCENT	.....CUMULATIVE....	FREQUENCY	PERCENT
.00	1074	87.39		1074	87.39
1.00	155	12.61		1229	100.00
	TOTAL 1229	100.00			

=====CLASS LIMITS=====	FREQUENCY .....
.00	1074 ;=====
1.00	155 ;=====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP2 LABEL: AGE VARIABLES  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 6

VARIABLE: 5. 65--+

PATIENTS AGED 65 YEARS AND OLDER

====CLASS LIMITS====	FREQUENCY	PERCENT	....CUMULATIVE....	FREQUENCY	PERCENT
.00 < 1.00	1156	94.06		1156	94.06
1.00 < 2.00	73	5.94		1229	100.00
	TOTAL 1229	100.00			

====CLASS LIMITS====	FREQUENCY	.....
.00 < 1.00	1156	=====
1.00 < 2.00	73	!=

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 10. AGE

THE PATIENT'S AGE

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	5.00	203	16.52	203	16.52
5.00 <	10.00	126	10.25	329	26.77
10.00 <	15.00	110	8.95	439	35.72
15.00 <	20.00	144	11.72	583	47.44
20.00 <	25.00	107	8.71	690	56.14
25.00 <	30.00	96	7.81	786	63.95
30.00 <	35.00	75	6.10	861	70.06
35.00 <	40.00	73	5.94	934	76.00
40.00 <	45.00	67	5.45	1001	81.45
45.00 <	50.00	45	3.66	1046	85.11
50.00 <	55.00	44	3.58	1090	88.69
55.00 <	60.00	34	2.77	1124	91.46
60.00 <	65.00	33	2.69	1157	94.14
65.00 <	70.00	35	2.85	1192	96.99
70.00 <	75.00	23	1.87	1215	98.86
75.00 <	80.00	8	.65	1223	99.51
80.00 <	85.00	3	.24	1226	99.76
85.00 <	90.00	1	.08	1227	99.84
90.00 <	95.00	2	.16	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....
.00 <	5.00	203  =====
5.00 <	10.00	126  =====
10.00 <	15.00	110  =====
15.00 <	20.00	144  =====
20.00 <	25.00	107  =====
25.00 <	30.00	96  =====
30.00 <	35.00	75  =====
35.00 <	40.00	73  =====
40.00 <	45.00	67  =====
45.00 <	50.00	45  =====
50.00 <	55.00	44  =====
55.00 <	60.00	34  =====
60.00 <	65.00	33  =====
65.00 <	70.00	35  =====
70.00 <	75.00	23  =====
75.00 <	80.00	8  =====
80.00 <	85.00	3  =====
85.00 <	90.00	1  =====
90.00 <	95.00	2  =====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 9. SEX

THE PATIENT'S GENDER

====CLASS LIMITS====	FREQUENCY	PERCENT	....CUMULATIVE... FREQUENCY PERCENT
.00 < 1.00	582	47.36	582 47.36
1.00 < 2.00	647	52.64	1229 100.00
	TOTAL 1229	100.00	

====CLASS LIMITS====	FREQUENCY .....
.00 < 1.00	582  =====
1.00 < 2.00	647  =====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 15. AD

PATIENT BENEFICIARY CATEGORY: ACTIVE DUTY

=====CLASS LIMITS=====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	1002	81.53	1002	81.53
1.00 <	2.00	227	18.47	1229	100.00
		TOTAL 1229	100.00		

=====CLASS LIMITS=====		FREQUENCY .....
.00 <	1.00	1002  =====
1.00 <	2.00	227  =====



----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

\*VARIABLE: 16. DEP-AD

PATIENT BENEFICIARY CATEGORY: DEPENDENT OF ACTIVE DUTY

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	521	42.39	521	42.39
1.00 <	2.00	708	57.61	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....
.00 <	1.00	521  =====
1.00 <	2.00	708  =====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 17. RET

PATIENT BENEFICIARY CATEGORY: RETIRED

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	1124	91.46	1124	91.46
1.00 <	2.00	105	8.54	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....
.00 <	1.00	1124  =====
1.00 <	2.00	105  ==

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 18. RET-DEP

PATIENT TRIAGE CATEGORY: DEPENDENT OF RETIRED

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	1063	86.90	1063	86.90
1.00 <	2.00	161	13.10	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....	
.00 <	1.00	1063	=====
1.00 <	2.00	161	=====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 19. OTHER

PATIENT BENEFICIARY CATEGORY: OTHER

====CLASS LIMITS====	FREQUENCY	PERCENT	....CUMULATIVE... FREQUENCY PERCENT
.00 < 1.00	1201	97.72	1201 97.72
1.00 < 2.00	28	2.28	1229 100.00
	TOTAL 1229	100.00	

====CLASS LIMITS====	FREQUENCY .....
.00 < 1.00	1201  =====
1.00 < 2.00	28

Inappropriate ETR visits

96

Appendix F

Day and Time of Presentation to the ETR Frequency  
Distributions

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 3. WEEK.DAY

DAY OF THE WEEK THE PATIENT PRESENTED FOR TREATMENT

====CLASS LIMITS====	FREQUENCY	PERCENT	....CUMULATIVE...	
			FREQUENCY	PERCENT
.00 < 1.00	569	46.30	569	46.30
1.00 < 2.00	660	53.70	1229	100.00
	TOTAL 1229	100.00		

====CLASS LIMITS====	FREQUENCY .....
.00 < 1.00	569  =====
1.00 < 2.00	660  =====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 4. D.SHIFT

PATIENTS WHO PRESENTED TO THE ETR DURING THE DAY SHIFT

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	843	68.59	843	68.59
1.00 <	2.00	386	31.41	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....	
.00 <	1.00	843	=====
1.00 <	2.00	386	=====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 5. E.SHIFT

PATIENTS WHO PRESENTED TO THE ETR DURING THE EVENING SHIFT

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	564	45.89	564	45.89
1.00 <	2.00	665	54.11	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....
.00 <	1.00	564  =====
1.00 <	2.00	665  =====



----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 6. N.SHIFT

PATIENTS WHO PRESENTED TO THE ETR DURING THE NIGHT SHIFT

=====CLASS LIMITS=====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	1051	85.52	1051	85.52
1.00 <	2.00	178	14.48	1229	100.00
		TOTAL 1229	100.00		

=====CLASS LIMITS=====		FREQUENCY .....	
.00 <	1.00	1051	=====
1.00 <	2.00	178	=====

Inappropriate ETR visits

101

Appendix G

Triage Category Frequency Distributions

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 11. EMERG

PATIENT TRIAGE CATEGORY: EMERGENT

=====CLASS LIMITS=====		FREQUENCY	PERCENT	....CUMULATIVE... FREQUENCY PERCENT
.00 <	1.00	1215	98.86	1215 98.86
1.00 <	2.00	14	1.14	1229 100.00
		TOTAL 1229	100.00	

=====CLASS LIMITS=====		FREQUENCY .....
.00 <	1.00	1215  =====
1.00 <	2.00	14

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 12. URGENT

PATIENT TRIAGE CATEGORY: URGENT

====CLASS LIMITS====	FREQUENCY	PERCENT	....CUMULATIVE... FREQUENCY PERCENT
.00 < 1.00	677	55.09	677 55.09
1.00 < 2.00	552	44.91	1229 100.00
	TOTAL 1229	100.00	

====CLASS LIMITS====	FREQUENCY .....
.00 < 1.00	677  =====
1.00 < 2.00	552  =====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 13. NON-URG

PATIENT TRIAGE CATEGORY: NON-URGENT

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	566	46.05	566	46.05
1.00 <	2.00	663	53.95	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....
.00 <	1.00	566  =====
1.00 <	2.00	663  =====

Inappropriate ETR visits

105

Appendix H

Control Variable Frequency Distributions

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 7. AMBUL

PATIENTS WHO ARRIVED AT THE ETR BY AMBULANCE OR EMS

=====CLASS LIMITS=====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	1192	96.18	1192	96.18
1.00 <	2.00	47	3.82	1229	100.00
		TOTAL 1229	100.00		

=====CLASS LIMITS=====		FREQUENCY .....
.00 <	1.00	1192  =====
1.00 <	2.00	47

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: A:GMP1 LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229 NUMBER OF VARIABLES: 19

VARIABLE: 14. ADMIT

PATIENTS WHO WERE ADMITTED TO DACH FROM THE ETR

====CLASS LIMITS====		FREQUENCY	PERCENT	....CUMULATIVE...	
				FREQUENCY	PERCENT
.00 <	1.00	1146	93.25	1146	93.25
1.00 <	2.00	83	6.75	1229	100.00
		TOTAL 1229	100.00		

====CLASS LIMITS====		FREQUENCY .....	
.00 <	1.00	1146	=====
1.00 <	2.00	83	==



Inappropriate ETR visits

108

Appendix I

Correlation Matrix

----- CORRELATION MATRIX -----

HEADER DATA FOR: A:GMP1      LABEL: GMP RESEARCH DATA  
 NUMBER OF CASES: 1229      NUMBER OF VARIABLES: 19

-----

CORRELATION MATRIX

	PRO.TIME	TOT.TIME	WEEK.DAY	D.SHIFT	E.SHIFT	N.SHIFT	AMBUL	APP/INAP
PRO.TIME	1.00000							
TOT.TIME	.51547	1.00000						
WEEK.DAY	-.12822	-.05428	1.00000					
D.SHIFT	-.00513	.06813	-.19439	1.00000				
E.SHIFT	.11925	.00492	.11750	-.73477	1.00000			
N.SHIFT	-.16215	-.09416	.09000	-.27848	-.44223	1.00000		
AMBUL	-.05286	.11376	.09155	-.01610	-.02921	.06260	1.00000	
APP/INAP	.24355	-.11111	-.12689	-.08576	.03758	.05522	-.12104	1.00000
SEX	.01417	.00501	.01813	.00629	.00299	-.01254	-.01481	.05629
AGE	.00966	.23645	-.00001	.15154	-.12351	-.02440	.07728	-.14476
EMERG	-.06325	.03669	.05354	.00996	.02192	-.04418	.05855	-.09285
URGENT	-.22680	.11843	.14620	.03394	.01089	-.05554	.11848	-.57279
NON-URG	.23980	-.12600	-.15729	-.03599	-.01554	.06483	-.13070	.59137
ADMIT	-.12184	.29909	.09382	.02747	-.03846	.01823	.19994	-.22624
AD	.02980	.02523	.00881	.01674	-.04135	.03648	.08002	-.00913
DEP-AD	-.00611	-.16676	.00921	-.13255	.11204	.01618	-.09509	.09312
RET	.00601	.15221	-.01977	.08167	-.04565	-.04307	.06048	-.06435
RET-DEP	-.00758	.08941	-.01190	.08538	-.05863	-.02959	-.00197	-.06778
OTHER	-.05137	-.00065	.01054	.04941	-.04542	-.00086	-.00201	-.01084

	SEX	AGE	EMERG	URGENT	NON-URG	ADMIT	AD	DEP-AD
SEX	1.00000							
AGE	.02703	1.00000						
EMERG	-.02104	.04959	1.00000					
URGENT	-.05765	.10653	-.09693	1.00000				
NON-URG	.06201	-.11686	-.11618	-.97729	1.00000			
ADMIT	-.04348	.17293	.27665	.19374	-.25224	1.00000		
AD	-.25828	.13552	-.05109	-.00403	.01490	.02231	1.00000	
DEP-AD	.21856	-.59965	-.01653	-.05957	.06296	-.14313	-.55485	1.00000
RET	-.28145	.48117	.10434	.02832	-.05048	.13814	-.14548	-.35629
RET-DEP	.18954	.23789	.00377	.05666	-.05735	.05888	-.18480	-.45261
OTHER	.04652	.19424	-.01639	.02657	-.02303	.02410	-.07268	-.17799

	RET	RET-DEP	OTHER
RET	1.00000		
RET-DEP	-.11867	1.00000	
OTHER	-.04667	-.05928	1.00000

CRITICAL VALUE (1-TAIL, .05) = + Or - .04695  
 CRITICAL VALUE (2-tail, .05) = +/- .05593

N = 1229

-----